PATENT
Atty. Dkt. No. APPM 006199/DISPLAY/AHRDWR/RKK

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:
White, et al.

Serial No.: 09/982,406

Confirmation No.: 6829

Filed: October 17, 2001

For: Substrate Support

§ Group Art Unit: 3652

§ Examiner: Keenan, James W.

MAIL STOP APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF MAILING
37 CFR 1.8
I hereby certify that this correspondence is being deposited on 1/17/06 with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450.

1/17/06
Date

Signature

Dear Sir:

APPEAL BRIEF

Applicants submit this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 3652 dated August 16, 2005, finally rejecting claims 8, 14, 15, 17-21, and 47-52. The final rejection of claims 8, 14, 15, 17-21, and 47-52 is appealed. This Appeal Brief is believed to be timely since mailed by the due date of January 17, 2006 as set by mailing a Notice of Appeal on November 16, 2005. Authorization to charge the fee of $500.00 for filing this brief is provided on a separate fee transmittal. Please charge any additional fees that may be required to make this Appeal Brief timely and acceptable to Deposit Account No. 20-0782/ APPM 006199/KMT.

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Real Party in Interest

The present application has been assigned to Applied Materials, Inc., 3050 Bowers Avenue, Santa Clara, California 95054.

Related Appeals and Interferences

Applicant asserts that no other appeals or interferences are known to the Applicant, the Applicant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 8, 14, 15, 17-21, and 47-52 are pending in the application. Claims 1 to 46 were originally presented in the application. Claims 47 to 58 were added in Applicants' Response to Office Action dated October 1, 2003. Claim 59 was added in Applicants' Response to Office Action dated February 11, 2004. Claims 1-7, 9-13, 16, 22-46, and 53-59 have been canceled without prejudice. Claims 8, 14, 15, 17-21, and 47-52 stand finally rejected as discussed below. The final rejections of claims 8, 14, 15, 17-21, and 47-52 are appealed. The pending claims are shown in the attached Claims Appendix.

Status of Amendments

All claim amendments have been entered by the Examiner. All claim amendments presented after final rejection have been entered by the Examiner and included in the Claims Appendix.

Summary of Claimed Subject Matter

In the embodiments of independent claim 8, an apparatus for supporting a substrate 32 comprises a chamber body 10 having at least one substrate access port 94, at least one support member 28 disposed in the chamber body 10, at least one socket 64 disposed in the support member 28 and having a ball support surface 68 and a formed end 80, and a ball 62 rotatably disposed on the ball support surface 68 and retained in the socket 64 by the formed end 80, the ball 62 adapted to contact and support the substrate 32 in a spaced-apart relation to the support member 28 is provided (page 4, paragraph [0027] to page 6, paragraph [0035]).

In the embodiments of independent claim 47, an apparatus for supporting a substrate 32 in a chamber body 10 having at least one substrate support member 28 coupled to the chamber body 10 comprises a spacer body 30 having a first portion 56 and a second portion 57, the first portion 56 adapted to interface with the support member 28, a socket 64 disposed in the second portion 57 and having a ball support surface 68 and a formed end 80, and a ball 62 rotatably disposed on the ball support surface 68 in the socket 64 and retained in the socket 64 by the formed end 80, wherein the ball 62 has a surface roughness of 4 micro-inches or smoother, the ball 62 adapted to contact and support a substrate 32 thereon is provided (page 4, paragraph [0027] to page 6, paragraph [0035]).

Grounds of Rejection to be Reviewed on Appeal

A. Claims 8 and 15 are rejected under 35 U.S.C. § 102(a) as being anticipated by *Toshio* (JP 2000-353737).

B. Claims 14, 47 and 51 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Toshio* in view of *Young* and *Hansson, et al* (U.S. Patent No. 4,621,936).

C. Claims 8, 15 and 17-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Okayama* (JP 2-121347) in view of *Young*, or alternatively, over *Young* in view of *Okayama*.

D. Claims 14, 47 and 51 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Okayama* in view of *Young* (or vice versa), as applied to claim 8 above, and further in view of *Hansson, et al*.

ARGUMENTS

A. Anticipation of Claims 8 and 15 over *Toshio*

Claims 8 and 15 are rejected under 35 U.S.C. § 102(a) as being anticipated by *Toshio* (JP 2000-353737). Applicants have respectfully traversed the rejection because *Toshio* has sidewalls to provide lateral support, but no formed end to retain the ball in the socket. Adhesion of the ball 9 to the substrate 1 in *Toshio* would lift the ball 9 out of the top plate 10 based on Figures 3 and 4 in *Toshio*. Thus, *Toshio*, alone or in combination, does not teach, show, or suggest a chamber body having at least one substrate access port, at least one support member disposed in the chamber body, at least one socket disposed in the support member and having a ball support surface and a formed end, and a ball rotatably disposed on the ball support surface and retained in the socket by the formed end, the ball adapted to contact and support the substrate in a spaced-apart relation to the support member, as recited in claim 8, and claim 15 dependent thereon. Reversal of the rejection of claims 8 and 15 and claims 14, 17-21, and 52 dependent thereon is respectfully requested.

B. Obviousness of Claims 14, 47, and 51 over *Toshio* in view of *Young* and *Hansson*

Claims 14, 47 and 51 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Toshio* in view of *Young* and *Hansson et al* (U.S. Patent No. 4,621,936). Applicants have respectfully traversed the rejections based on failure of *Toshio* and the other references to teach or suggest the claimed subject matter as asserted by the Examiner.

Toshio has sidewalls to provide lateral support, but no formed end to retain the ball in the socket. *Young* uses bores to support the plunger and does not suggest a socket with a support surface to support the plunger. *Hansson* suggests using a smooth rolling ball because it reduces the likelihood of corrosion from ink, not because it

provides any support properties. None of the references describe a socket having a formed end that retains the ball in the socket.

Toshio, Young, and *Hansson,* alone or in combination, do not teach, show, or suggest a chamber body having at least one substrate access port, at least one support member disposed in the chamber body, at least one socket disposed in the support member and having a ball support surface and a formed end, and a ball rotatably disposed on the ball support surface and retained in the socket by the formed end, the ball adapted to contact and support the substrate in a spaced-apart relation to the support member, as recited in claim 8, and claims 14, 17 – 21, and 52 dependent thereon.

Toshio, Young, and *Hansson,* alone or in combination, do not teach, show, or suggest a spacer body having a first portion and a second portion, the first portion adapted to interface with the support member, a socket disposed in the second portion and having a ball support surface and a formed end, and a ball rotatably disposed on the ball support surface in the socket and retained in the socket by the formed end, wherein the ball has a surface roughness of 4 micro-inches or smoother, the ball adapted to contact and support a substrate thereon, as recited in claim 47, and claims 48-51 dependent thereon.

C. Obviousness of Claims 8, 15, and 17–19 over *Okayama* in view of *Young* (or *vice versa*)

Claims 8, 15 and 17-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Okayama* (JP 2-121347) in view of *Young*, or alternatively, over *Young* in view of *Okayama*. Applicants have respectfully traversed the rejection based on failure of *Okayama* and *Young* to teach or suggest the claimed subject matter.

Okayama teaches support balls housed in a structure containing ball bearings used in combination with driving rollers and guide rollers to move a wafer as part of a wafer rotation system. *Young* uses bores to support the plunger.

Okayama and *Young,* alone or in combination, do not teach, show, or suggest a chamber body having at least one substrate access port, at least one support member

disposed in the chamber body, at least one socket disposed in the support member and having a ball support surface and a formed end, and a ball rotatably disposed on the ball support surface and retained in the socket by the formed end, the ball adapted to contact and support the substrate in a spaced-apart relation to the support member, as recited in claim 8, and claims 14, 15, 17–21, and 52 dependent thereon.

D. Obviousness of Claims 14, 47 and 51 over *Okayama* in view of *Young* (or vice versa) and in combination with *Hansson, et al.*

Claims 14, 47 and 51 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Okayama* in view of *Young* (or vice versa), as applied to claim 8 above, and further in view of *Hansson, et al.* Applicants have respectfully traversed the rejection based on failure of *Okayama, Young,* and *Hansson* to teach or suggest the claimed subject matter.

Okayama teaches support balls housed in a structure containing ball bearings used in combination with driving rollers and guide rollers to move a wafer as part of a wafer rotation system. *Young* uses bores to support the plunger. *Hansson* suggests using a smooth rolling ball because it reduces the likelihood of corrosion from ink. None of the references describe a socket having a formed end that retains the ball in the socket.

Okayama, Young, and *Hansson,* alone or in combination, do not teach, show, or suggest a chamber body having at least one substrate access port, at least one support member disposed in the chamber body, at least one socket disposed in the support member and having a ball support surface and a formed end, and a ball rotatably disposed on the ball support surface and retained in the socket by the formed end, the ball adapted to contact and support the substrate in a spaced-apart relation to the support member, as recited in claim 8, and claims 14-15, 17-21, and 52 dependent thereon.

Okayama, Young, and *Hansson,* alone or in combination, do not teach, show, or suggest a spacer body having a first portion and a second portion, the first portion adapted to interface with the support member, a socket disposed in the second portion and having a ball support surface and a formed end, and a ball rotatably disposed on the ball support surface in the socket and retained in the socket by the formed end,

wherein the ball has a surface roughness of 4 micro-inches or smoother, the ball adapted to contact and support a substrate thereon, as recited in claim 47, and claims 48-51 dependent thereon.

CONCLUSION

For the reasons presented above, Applicants respectfully submit that the rejection of claims 8, 14, 15, 17 - 21, and 47 - 52 under 35 U.S.C. § 102(a) and under 35 U.S.C. § 103(a) are improper. Reversal of the rejections of the claims is respectfully requested.

Respectfully submitted,

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CLAIMS APPENDIX

1-7. (Cancelled)

8. (Previously Presented) An apparatus for supporting a substrate, comprising:

a chamber body having at least one substrate access port;

at least one support member disposed in the chamber body;

at least one socket disposed in the support member and having a ball support surface and a formed end; and

a ball rotatably disposed on the ball support surface and retained in the socket by the formed end, the ball adapted to contact and support the substrate in a spaced-apart relation to the support member.

9-13. (Canceled)

14. (Original) The apparatus of claim 8, wherein the ball has a surface roughness of 4 micro-inches or smoother.

15. (Previously Presented) The apparatus of claim 8 further comprising:

a plurality of mounting pins coupled to the support member, each pin coupled to a respective spacer.

16. (Cancelled)

17. (Previously Presented) The apparatus of claim 8, wherein the at least one support member is positioned to support a center portion of the substrate.

18. (Previously Presented) The apparatus of claim 8, wherein a plurality of the support members support a perimeter portion of the substrate and at least one of the at least one support member is positioned to support a center portion of the substrate.

19. (Previously Presented) The apparatus of claim 8, wherein a plurality of spacers having fixed top surfaces support a perimeter portion of the substrate and at least one of the at least one support member is positioned to support a center portion of the substrate.

20. (Previously Presented) The apparatus of claim 8, wherein the ball is coated or plated.

21. (Previously Presented) The apparatus of claim 8, wherein the ball is coated or plated chromium, an aluminum alloy, silicon nitride, or tungsten nitride.

22-46. (Cancelled)

47. (Previously Presented) Apparatus for supporting a substrate in a chamber body having at least one substrate support member coupled to the chamber body, comprising:

a spacer body having a first portion and a second portion, the first portion adapted to interface with the support member;

a socket disposed in the second portion and having a ball support surface and a formed end; and

a ball rotatably disposed on the ball support surface in the socket and retained in the socket by the formed end, wherein the ball has a surface roughness of 4 micro-inches or smoother, the ball adapted to contact and support a substrate thereon.

48. (Previously Presented) The apparatus of claim 47, wherein the ball is electropolished.

49. (Previously Presented) The apparatus of claim 47, wherein the ball is at least one of coated or plated.

50. (Previously Presented) The apparatus of claim 49, wherein the ball is coated or plated with chromium, an aluminum alloy, silicon nitride, or tungsten nitride.

51. (Previously Presented) The apparatus of claim 47, wherein the ball support surface has a radius greater than a radius of the ball.

52. (Previously Presented) The apparatus of claim 8, wherein the balls are electropolished.

53-59. (Cancelled)

EVIDENCE APPENDIX

No evidence is submitted with this Brief.

RELATED PROCEEDINGS APPENDIX

No copies of decisions rendered by a court or the Board in the related appeal or interference listed on page 4 of this Brief are included as there have been no decisions by the court or the Board in the related appeal or interference listed on page 4 of this Brief.

PTO/SB/17 (12-04v2)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Effective on 12/08/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL for FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT	($) 500.00

Complete if Known	
Application Number	09/982,408
Filing Date	October 17, 2001
First Named Inventor	White, et al.
Examiner Name	Keenan, James W.
Art Unit	3652
Attorney Docket No.	APPM006199/DISPLAY/AHRDWR/RKK

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify) :

☒ Deposit Account Deposit Account Number: 50-1074/006199/DISPLAY/AHRDWR Deposit Account Name: Applied Materials, Inc.

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee

☒ Charge any additional fee(s) or underpayments of fee(s) Under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
		Small Entity		Small Entity		Small Entity	
Application Type	Fee ($)	Fee($)	Fee($)	Fee($)	Fee($)	Fee($)	Fees Paid ($)
Utility	300	150	500	250	200	100	____
Design	200	100	100	50	130	65	____
Plant	200	100	300	150	160	80	____
Reissue	300	150	500	250	600	300	____
Provisional	200	100	0	0	0	0	____

2. EXCESS CLAIM FEES

Fee Description	Small Entity Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee($)	Fee Paid ($)
____ -20 or HP=	____	x ____	= ____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee($)	Fee Paid ($)
____ - 3 or HP=	____	x ____	= ____

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	
Fee ($)	Fee Paid ($)
____	____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee ($)	Fee Paid ($)
____ - 100 =	____ / 50 =	____ (round up to a whole number) x		= ____

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	____
Other (e.g., late filing surcharge) : Appeal Brief	500.00

SUBMITTED BY

Signature	Robert W. Mulcahy	Registration No. (Attorney/Agent) 25,436	Telephone 713-623-4844
Name (Print/Type)	Robert W. Mulcahy		Date January 17, 2006